SCANNING ELECTRONIC MICROSCOPE ANALYSES AND X-RAYS DIFRACTION OF THE CVD DIAMOND FILM DEPOSITED ON TI6AL4V ALLOY UTILIZING MICROWAVE PLASMA REACTOR

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Keywords: Microwave Plasma Reactor, X-Rays Difraction, CVD, Ti6Al4V

Abstract

The analyses by scanning electronic microscope (SEM) permitted to present to film morphology and verify itself there is some pull of the film regarding the substrate (qualitative adhesion). Through of the SEM observed himself that to film obtained presents good homogeneity, with medium size of the grains of diamond more less than 1μm in all of the cases. The handling with ultra-sound on the Ti6Al4V alloy, permitted the obtaining of a continuous film after 40 minutes of deposition, with 4% of methane in volume in the mixture hydrogen-methane, with size of grains. By X-Rays difraction[1] was possible verify the elements and composed present chemists in the sample before and after the deposition and, when possible, the crystalline orientation of the film. There is the difratogram for the Ti6Al4V alloy before of the deposition. The peak centered in the angle to the around of θ=19° corresponds to the Al. There is not presence of the V, therefore its concentration is more less than 5%. The too peaks refer to the Ti. The main peak of the is around θ=20°. The main diamond peak is around θ=22°. In the bulk surface, where the film completely, was verified the predominance of the TiC in the difratogram. Also established himself the presence of the TiC in the diverse samples analyzed after the growth of the film. The TiC forms himself, before of the deposition of the film of diamond, altering the composition of the surface.

Financial support: FAPESP, FUNDUNESP, PROPP-UNESP, CNPQ.

REFERENCES

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